

App. No. 10/708,618
Amendment dated August 12, 2005
Reply to Office action of April 18, 2005

Listing of Claims:

Claim 1 (currently amended): In a two-dimensional photonic crystal configured by an arrangement, in a regular section of a two-dimensional lattice of points defined in a slab, of low-refractive-index substances having a small refractive index relative to the slab and being of predetermined identical dimension and shape, a cavity made from a point defect within the two-dimensional photonic crystal, wherein:

said point defect contains among said lattice points a plurality of three or more neighboring one another, and in said plurality of three or more lattice points said low-refractive-index substances are missing from said arrangement; and

in said arrangement at least one of said low-refractive-index substances that ~~would otherwise be~~ being arranged to correspond to at least one among those of said lattice points being nearest said point defect is dimensionally altered from said predetermined dimension.

Claim 2 (currently amended): A cavity as set forth in claim 1, wherein in said arrangement at least one of said low-refractive-index substances ~~that would otherwise be~~ arranged to correspond to at least one among those of said lattice points being secondarily adjacent said point defect is altered dimensionally from said predetermined dimension.

Claim 3 (original): A cavity as set forth in claim 1, wherein said point defect contains six or fewer of said lattice points.

Claim 4 (original): A cavity as set forth in claim 1, wherein the wavelength of light that resonates in said cavity is adjustable in dependency upon the dimension and shape of said point defect.

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Claim 5 (original): A cavity as set forth in claim 1, wherein said point defect contains said plurality of lattice points in a form in which said plurality is lined in a line segment.

Claim 6 (original): A cavity as set forth in claim 1, wherein said low-refractive-index substances are filled into columns perforating said slab.

Claim 7 (original): A cavity as set forth in claim 1, wherein the points in said two-dimensional lattice are arrayed in a triangular lattice.

Claim 8 (original): A cavity as set forth in claim 1, wherein said slab has a refractive index of 2.0 or greater.

Claim 9 (original): A cavity as set forth in claim 1, wherein said low-refractive-index substances are air.

Claim 10 (original): In a two-dimensional photonic crystal, a channel add/drop filter comprising: at least one waveguide made from a line defect within said two-dimensional photonic crystal; and at least one cavity as set forth in claim 1, said cavity being disposed adjacent said waveguide, within a separation in which an electromagnetically reciprocal effect is produced between said cavity and said waveguide.

Claim 11 (original): A channel add/drop filter as set forth in claim 10, comprising a plurality of said cavities, wherein said cavities differ from one another in resonant frequency.